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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/711,178	11/13/2000	James M. Clark	0918.0044C	6599

27896 7590 02/23/2004

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EXAMINER

PATHAK, SUDHANSHU C

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 02/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/711,178

Applicant(s)

CLARK, JAMES M.

Examiner

Sudhanshu C. Pathak

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on November 13th, 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 and 10 is/are allowed.
- 6) ☒ Claim(s) 1-7 and 11-25 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on November 13th, 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-to-25 are pending in the application.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 19-25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The subject matter claimed is a transmission signal, a signal in itself is unpatentable, but a method and apparatus to generate the desired signal are patentable.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over L.B. Milstein et al. (Combination Sequences for Spread Spectrum Communications; IEEE Transactions on Communications; July 1977; Pages 691-696) in view of Applicant Admitted Prior Art (AAPA).

Regarding to Claims 1-3, Milstein discloses a method for generating a long code comprising of multiple short codes (Abstract, Pg. 691, lines 1-7 & Introduction, Pg. 691, Column 1, lines 22-28, 36-39 & Pg. 694, Column 2, Conclusion, lines 31-37).

Milstein further discloses generating two shorter sequences of various lengths and different phase (Pg. 691, Column 2, lines 19-31 & Table 1 & Pg. 692, Column 1, lines 60-63 & Pg. 692, Column 2, lines 8-30, 59-61). However, Milstein does not disclose generating the short codes from a reference codes according to a pattern and further repeating the steps of generating the codes for a predetermined number of times.

The Applicant Admitted Prior Art (AAPA) discloses a method for generating a short code from a reference code (Fig. 2 & Fig. 3A-B & Specification, Page 3, lines 25-31 & Page 4, lines 1-11). The AAPA further discloses repeating the reference pattern a predetermined number of times until a predetermined maximal-length PN sequence is produced (Specification, Page 4, lines 1-4 & Fig. 2-3). The AAPA discloses the length of the reference pattern to be of seven symbols (Specification, Page 4, lines 5-11 & Fig. 2-3). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the AAPA teaches a method for generating short codes that can be combined to create a long code as described in Milstein. Furthermore, multiple reference codes and multiple shift registers can be implemented as described in the AAPA in parallel to generate multiple short codes, furthermore the changing the reference sequence code length and phase is a matter of design choice and there is no criticality in varying it depending on a predetermined pattern.

Regarding to Claim 4, Milstein in view of AAPA discloses a method and apparatus for generating a long code by combining multiple short codes as

described above. Milstein further discloses generating short codes with multiple lengths and phases (Pg. 691, Column 2, lines 19-31 & Table 1 & Pg. 692, Column 1, lines 60-63 & Pg. 692, Column 2, lines 8-30, 59-61). Milstein further discloses generating short codes to generate a long code with a specified auto correlation (Table 1-4 & Pg. 691, Column 2, lines 32-63 & Pg. 693, Column 1, lines 1-29). The AAPA also discloses generating a long code to have good auto correlation properties (Specification, Pg. 1, lines 18-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the combinational long code generated by the combination of short codes as described in Milstein can be generated to have a specified autocorrelation characteristic, thus satisfying the limitation of the claim.

Regarding to Claim 5, Milstein in view of AAPA discloses a method and apparatus for generating a long code by combining multiple short codes as described above. However, Milstein does not disclose the reference code to be pseudonoise code.

The Applicant Admitted Prior Art (AAPA) discloses that the reference code generator to be a pseudonoise code generator (Fig. 1, element 2 & Fig. 2 & Specification, Pg. 1, lines 18-19 & Pg. 3, lines 17-31 & Pg. 3, lines 17-31 & Pg. 4, lines 1-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention the AAPA teaches that the reference code is a pseudonoise code and can be implemented in generating the two different short codes as described in Milstein.

Regarding to Claim 6, Milstein in view of AAPA discloses a method and apparatus for generating a long code by combining multiple short codes as described above. However Milstein does not specify the reference code to be stationary.

The AAPA discloses that the long code generated by the transmitter is known in the receiver and the PN code generator in the receiver generates the code in the receiver, and furthermore the reference code is delayed to correspond to the various phases to be tested against the received code signal (Fig. 1, element 14 & Specification, Pg. 3, lines 7-24). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the AAPA teaches that the long code transmitted by the transmitter is known beforehand in the receiver and the code is stationary and can be implemented by short codes as described in Milstein, thus satisfying the limitations of the claim.

Regarding to Claim 7, Milstein in view of AAPA discloses a method and apparatus for generating a long code by combining multiple short codes as described above. However Milstein does not specify the reference pattern to be predetermined and fixed.

The AAPA discloses that the reference pattern to comprise a fixed and predetermined pattern (Fig. 2 & Fig. 3A-B & Specification, Pg. 4, lines 1-11 & Pg. 3, lines 7-24). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention that the AAPA discloses the reference pattern used to

generate the short codes is fixed and predetermined and implemented to generate a long code as described in Milstein.

6. Claims 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Hasegawa (5,432,814).

Regarding to Claims 11 & 17, The Applicant Admitted Prior Art (AAPA) discloses an apparatus (Fig. 1, element 1 & Specification, Pg. 3, lines 1-6) for generating a composite code comprising a clock oscillator outputting a clock signal (Fig. 1, element 4), a timing counters coupled to the clock oscillator, counting in response to the clock signal, (Fig. 1, element 3), and a code generator coupled to the timing counters and generating a code (Fig. 1, element 2). However, The AAPA does not disclose a controller for generating a control signal based on the count and indicating the dither amount.

Hasegawa discloses a spread spectrum communication system wherein the spreading signal includes a plurality of PN codes, which differ from each other (Abstract, lines 1-9 & Fig. 1 & Fig. 8). Hasegawa further discloses the controller sending a control signal to the PN code generator for selecting the PN code to be used for spreading the data based on a predetermined pattern (Abstract, lines 1-9 & Fig. 1, 8, 5 & Column 4, lines 1-19 & Column 7, lines 60-68 & Column 8, lines 1-5). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that implementing the controller as described in Hasegawa with the timing counters as described in AAPA to count the response to the clock and

generate a control signal to indicate the PN sequence depending on a predetermined pattern.

Regarding to Claims 12 & 13, the Applicant Admitted Prior Art (AAPA) in view of Hasegawa discloses an apparatus for generating a composite code as described above. AAPA further the dither amount indicating a length of the code to be generated (Specification, Pg. 2, lines 13-17 & Pg. 2, lines 1-6 & Fig. 1). However, the AAPA does not disclose the dithering pattern to be phase rotation amount or length of the code to be generated.

Hasegawa discloses that the PN code generator generate code different from each other and are selected depending on the hopping pattern implemented by the choice (Abstract, lines 1-9 & Column 4, lines 1-14 & Column 7, lines 60-68 & Column 8, lines 1-5). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Hasegawa teaches that the PN code selected could be different to each other with respect to phase, length or content depending on the dithering pattern.

Regarding to Claim 14, the Applicant Admitted Prior Art (AAPA) in view of Hasegawa discloses an apparatus for generating a composite code as described above. The AAPA further discloses a transmission unit for transmitting the dithered code generated by the code generator (Fig. 1, element 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA in view of Hasegawa meets the limitations of the claim.

Regarding to Claim 15, the Applicant Admitted Prior Art (AAPA) in view of Hasegawa discloses an apparatus for generating a composite code as described above. The AAPA further discloses the controller generates the control signal to control the generator to produce the composite code to have an optimal autocorrelation (Fig. 1, element 3 & Specification, Pg. 1, lines 18-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA in view of Hasegawa meets the limitations of the claim.

Regarding to Claim 16, the Applicant Admitted Prior Art (AAPA) in view of Hasegawa discloses an apparatus for generating a composite code as described above. The AAPA further discloses that the reference code generator to be a pseudonoise code generator (Fig. 1, element 2 & Fig. 2 & Specification, Pg. 1, lines 18-19 & Pg. 3, lines 17-31 & Pg. 3, lines 17-31 & Pg. 4, lines 1-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA in view of Hasegawa meets the limitations of the claim.

Regarding to Claim 18, the Applicant Admitted Prior Art (AAPA) in view of Hasegawa discloses an apparatus for generating a composite code as described above. The AAPA further discloses the dither pattern to be fixed in length and repeats (Specification, Pg. 2, lines 13-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA in view of Hasegawa meets the limitations of the claim.


Allowable Subject Matter

7. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. Claims 9 & 10 are allowable over prior art of record because the cited references do not contain the specified limitation of a method of generating a composite code of "M" instances of a reference code and phase comprising selecting an (N-1)th code generated from the reference code having a (N-1)th phase, selecting a (N)th code generated from the reference code having a (N)th phase and determining a vector "V" between the (N-1)th and (N)th codes and phase and further adding the vector "V" to the (N-1)th code and codes prior to (N-1) to determine the disallowed points and finally selecting the (N+1)th code from among the code points other than the disallowed code points.
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (703)-305-0341. The examiner can normally be reached (Monday-Friday) from 8:30 AM to 5:30PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin, can be reached at: (703) 305-4714. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C., 20231
Or faxed to: (703) 872-9314 (for Technology Center 2600 only)
Hand-delivered responses should be brought to: Crystal Park II
2121 Crystal Drive
Arlington, VA., Sixth Floor (Receptionist).

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